

WHAT IS CLAIMED IS:

- 1 1. A method of forming a fin-shaped transistor, the method
2 comprising:
3 providing a sacrificial fin structure in a compound semiconductor
4 layer;
5 removing the sacrificial fin structure to form a trench in the
6 compound semiconductor layer;
7 providing a fin-shaped strained silicon structure within the trench,
8 the trench being associated with the fin-shaped transistor;
9 forming a gate structure for the fin-shaped strained silicon
10 structure.
- 1 2. The method of claim 1, further comprising providing a
2 sacrificial gate structure adjacent the sacrificial fin structure.
- 1 3. The method of claim 2, wherein the sacrificial gate structure
2 includes nitride.
- 1 4. The method of claim 2, further comprising removing the
2 sacrificial gate structure.
- 1 5. The method of claim 4, wherein the sacrificial gate structure
2 includes polysilicon.
- 1 6. The method of claim 1, wherein the compound
2 semiconductor layer includes a source region and a drain region, the
3 sacrificial fin structure being between the source region and the drain
4 region.
- 1 7. The method of claim 6, wherein the compound
2 semiconductor layer is a silicon germanium layer.

1 8. The method of claim 6, wherein the sacrificial fin structure
2 includes silicon germanium.

1 9. The method of claim 1, wherein the fin-shaped channel
2 region has an aspect ratio of between approximately 1.5 and 3.0.

1 10. A method of forming a finFET, the method comprising:
2 providing a first layer above an insulating layer above a substrate,
3 the first layer including silicon germanium, the first layer including a fin
4 structure;
5 removing the fin structure to form an aperture in the first layer;
6 providing a strained material within the aperture; and
7 providing a gate structure for the strained material to form the
8 finFET.

1 11. The method of claim 10, wherein the removing step is an
2 etching step selective to the fin structure.

1 12. The method of claim 10, wherein the strained material is
2 provided by selective silicon epitaxy.

1 13. The method of claim 10, further comprising forming a gate
2 dielectric structure along sidewalls and a top of the strained material.

1 14. The method of claim 10, wherein the strained material is
2 grown within the aperture in the first layer.

1 15. The method of claim 14, wherein strained material includes
2 silicon.

1 16. The method of claim 15, wherein the fin structure is
2 between a source region and a drain region.

1 17. A method of fabricating an integrated circuit including a fin-
2 based transistor, the method comprising steps of:
3 providing an insulative material;
4 providing a strain-inducing layer above the insulative material, the
5 strain-inducing layer including a narrow trench, the narrow trench
6 including a sacrificial fin structure;
7 removing the sacrificial fin structure; and
8 forming a strained material in the narrow trench.

1 18. The method of claim 17, wherein the removing step is an
2 etching step selective to the fin structure.

1 19. The method of claim 17, further comprising providing a gate
2 structure for the strained material.

1 20. The method of claim 19, wherein the gate structure includes
2 polysilicon.